



## UW A&A PRESENTS: CHAIR'S DISTINGUISHED SEMINAR SERIES



DR. SERGIO PELLEGRINO

**CALIFORNIA INSTITUTE OF TECHNOLOGY**

Joyce and Kent Kresa Professor of Aeronautics & Professor of Civil Engineering  
JPL Senior Research Scientist

Fellow of the Royal Academy of Engineering & AIAA

President of the International Association for Shell and Spatial Structures (IASS)

## ULTRALIGHT DEPLOYABLE STRUCTURES for Space-Based Solar Power

*Taking a closer look at novel packaging and deployment concepts.*

**FEB. 23 2016** / 1:30-2:20PM / GUG 220

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WILLIAM E. BOEING  
DEPARTMENT OF AERONAUTICS & ASTRONAUTICS

# UW A&A CHAIR'S DISTINGUISHED SEMINAR SERIES:

DR. SERGIO PELLEGRINO, CALTECH

## ABSTRACT:

A team of Caltech researchers is currently developing component technologies that aim to enable cost-competitive space-based solar power systems. The proposed overall system architecture is a constellation of identical modules, similar to solar sails, that fly in formation. The basic functional unit is a multifunctional tile that acts as a light collector, photovoltaic converter, power transformer, phase shifter, and electromagnetic radiator and has the areal density of one sheet of paper! This talk will provide an overview of the overall system concept. It will then focus on the deployable space structures that are being developed for this project, and particularly on novel packaging and deployment concepts.

## SPEAKER BIO:

Sergio Pellegrino, Joyce and Kent Kresa Professor of Aeronautics and Professor of Civil Engineering at the California Institute of Technology and JPL Senior Research Scientist, received a Laurea in Civil Engineering from the University of Naples in 1982 and a PhD in Structural Mechanics from the University of Cambridge in 1986. His general area of research is the mechanics of lightweight structures, with a focus on packaging, deployment, shape control and stability. With his students and collaborators, he is currently working on novel concepts for future space telescopes, spacecraft antennas, and space-based solar power systems. As a member of the NASA Superpressure Balloon design team, for over 10 years he has worked on analysis methods for stratospheric balloons. Dr Pellegrino's publications have been selected for several awards, including the ICE James Watt Medal 2000; AIAA Gossamer Spacecraft Forum Best Paper Award in 2004, 2005, 2006, 2011 and 2013; IASS Tsuboi Award in 2004, 2005, and 2007; ASME/Boeing Best Paper Award in 2008; and ASME Mechanisms and Robotics Committee Best Paper Award in 2013. He has received a Pioneers' Award in 2002 from the Space Structures Research Center, University of Surrey and a NASA Robert H. Goddard Exceptional Achievement Team Award in 2009. Dr Pellegrino is a Fellow of the Royal Academy of Engineering, a Fellow of AIAA and a Chartered Structural Engineer. He is President of the International Association for Shell and Spatial Structures (IASS) and Editor-in-Chief of the Journal of the IASS. Dr Pellegrino is the author of over 250 technical publications.

## RSVP & WEBCAST LINKS:

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